SERVICE DATA
FILE NO. 140-107

TOSHIBA

QUARTZ LOCKED TURNTABLE

SR-Q660

SPECIFICATIONS

Drive system:	Direct drive
Motor type:	Coreless and slotless motor QUARTZ PLL Servo-control
Turntable speeds:	33-1/3 and 45 rpm
Turntable platter:	31 cm aluminum diecast
Tonearm:	Static balanced pipe tonearm Effective length: 215 mm Overhang: 16 mm Tracking error: $-2^\circ \sim +2^\circ$ Tracking force adjustment (direct-read scale) Detachable headshell Anti-skating mechanism (direct-read scale co-ordinated with tracking force) Net weight range of replaceable cartridges 13 ~ 18 g (including headshell and lock nut)
Cartridge:	Moving magnet (MM) C290M Output voltage: 0.6 mV/cm/sec Frequency response: 20 ~ 20,000 Hz Channel balance (1 kHz): < 1 dB Crosstalk (1 kHz): > 25 dB Load resistance: 47K ~ 100K ohm Stylus tip: 15μm diamond-tipped round stylus Dynamic compliance (lateral): 8 mm/N Tracking force: 1.75 ± 0.25 gf Stylus replacement: N-290D
Wow and flutter:	DIN: zero to peak 0.035% WRMS: less than 0.025%
Rumble:	DIN A: lower than –45 dB DIN B: lower than –75 dB
Mains voltage and frequency:	AC 220 - 240V (50 Hz)
Power consumption:	Max. 6W
Major dimensions (mm):	with cover closed 420(W) x 125(H) x 382(D) with cover fully opened 420(W) x 380(H) x 432(D)
Weight:	Approx. 5.5 kg
Features:	Full automatic mechanisms (auto-start, auto-stop, auto-return, auto-repeat, manual), cueing system, detachable free-stop dust cover

Specifications are subject to change without notice.

TE, TU, AY

1. OPERATING CONTROLS

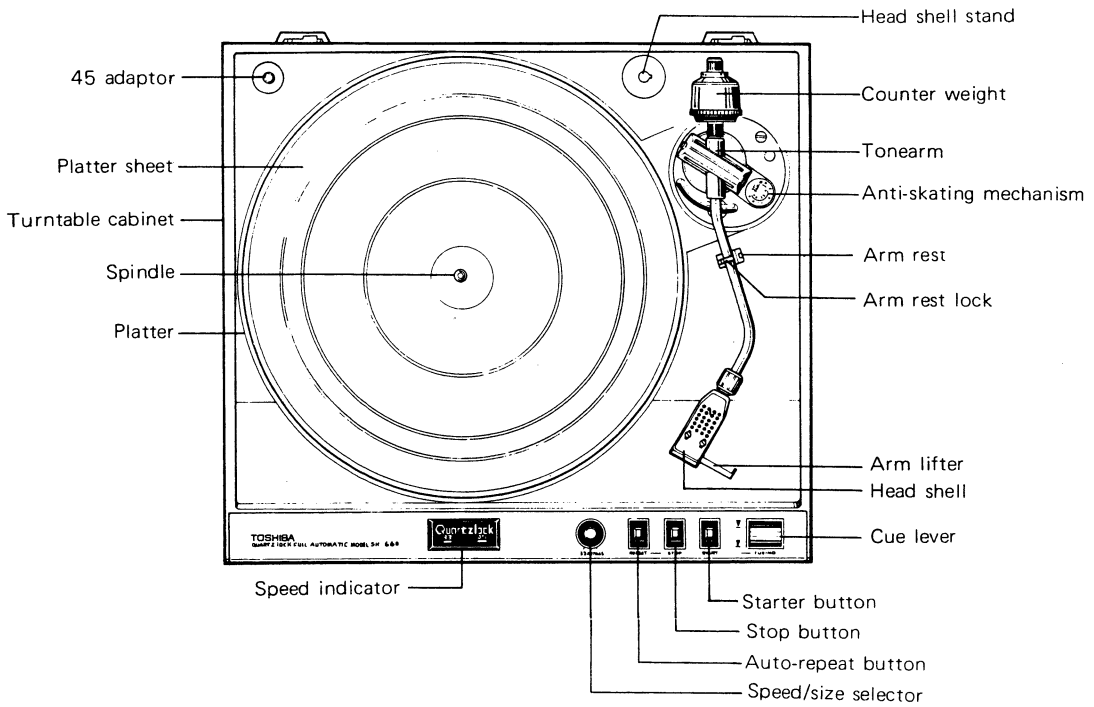


Figure 1.

2. BLOCK DIAGRAM

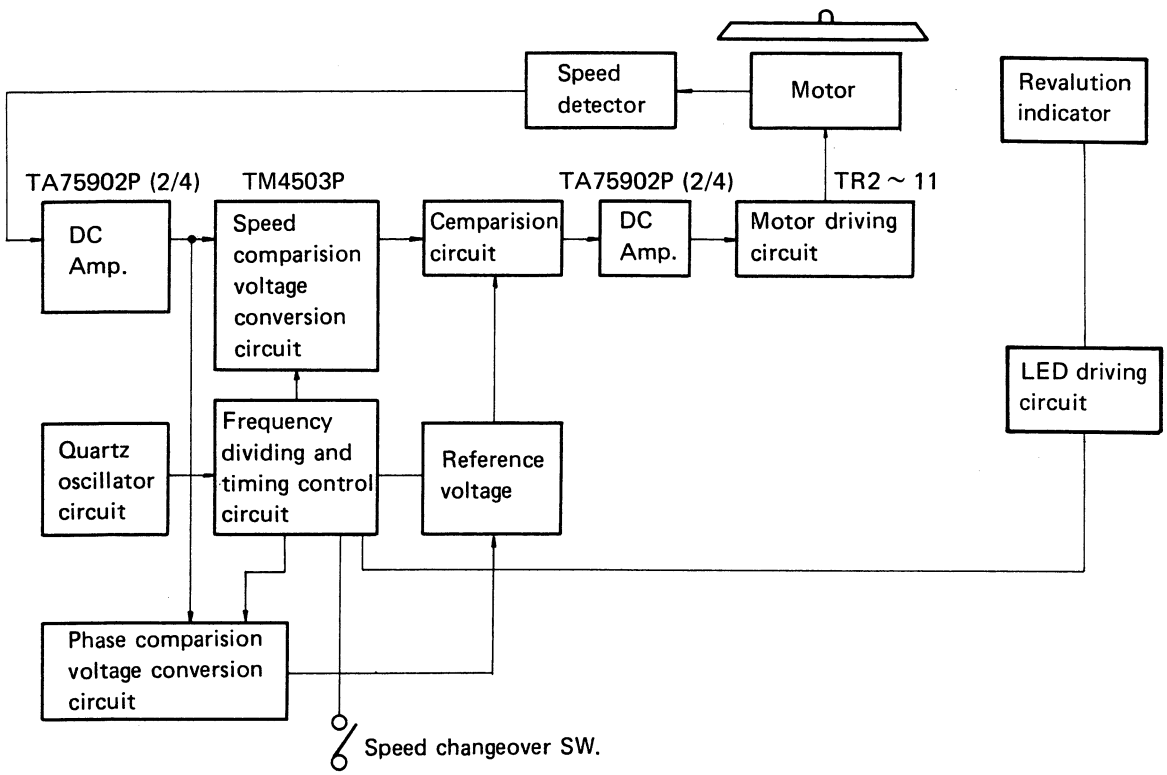


Figure 2.

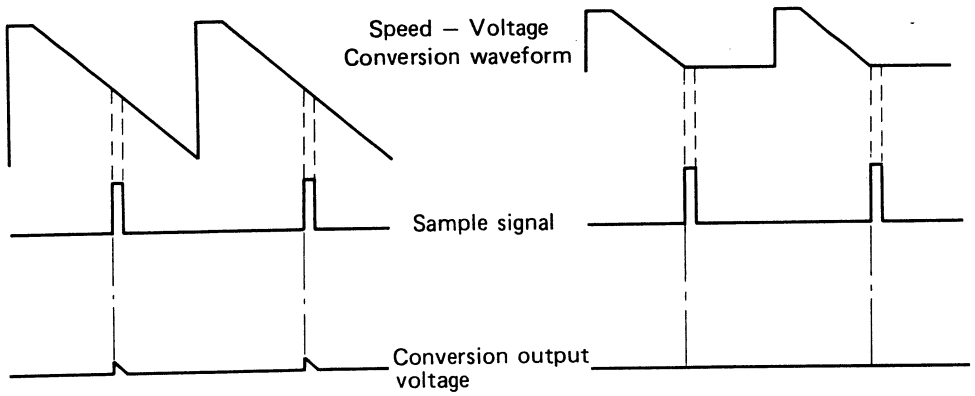
3. TECHNICAL POINTS

PLL SYSTEM BY IC "TM-4503P" (USED ONLY FOR QUARTZ DD)

TM-4503P is one-tip MOS LSI, employing sample & hold system in speed serbo and phase serbo voltage conversion section.

Including no FG base frequency in conversion output voltage as shown in figure below and use no integmator which deteriorates response speed, this system can maintain high response frequency in serbo circuit, enlaiges disturbance regnlation rate and also improves revalntion precision, together with slat and coreless motor, large circular integration system FG and quartz speed detector mentioned hereafter.

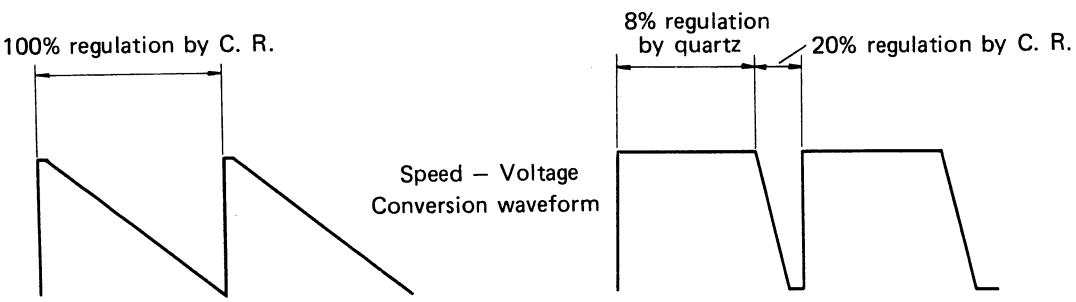
Quartz detector, owing to employ quartz regulation system instead of C. R. regulation system hwich is used in conventional sample & hold system, improves the phase stability at quartz lock remarkably by response efficiency of sample & hold system of RAMP HOLD and quartz stability.



Conventional sample & hold system

Sample & hold system of RAMP HOLD in SR-Q660

Figure 3.



Speed by conventional – Voltage convertor

Speed by quartz in SR-Q660 – Voltage convertor

Figure 4.

DISASSEMBLY INSTRUCTIONS

BOTTOM PLATE REMOVAL.

1. Remove 6 Screws ① . See figure 5.
2. Remove the bottom plate from the Cabinet.

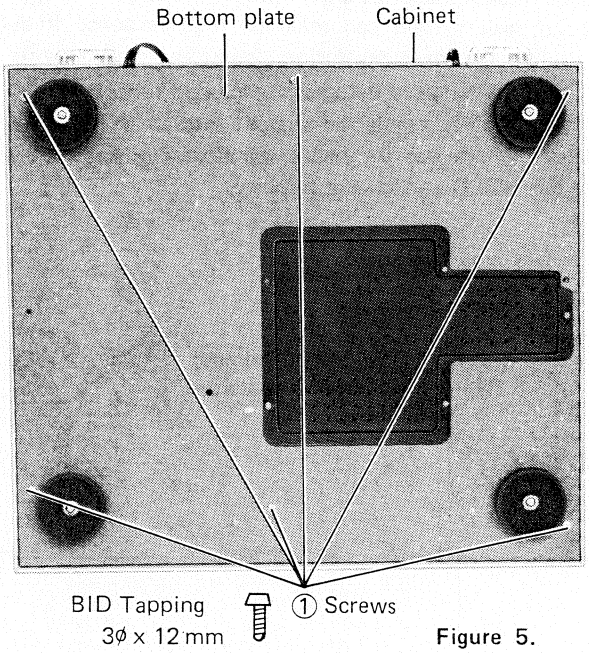


Figure 5.

SUB-CHASSIS REMOVAL

1. Remove 2 screws ② and detach the operation lever.
2. Remove the ring and detach the cueing rod ③ from the cueing knob.
3. Remove the size select rod ④ .
4. Remove the motor connecting socket.
5. Unsolder the leed wire ⑥ for PU arm.
6. Remove the cord clamper ⑦ which secures the US pin plug cord.
7. Remove 6 screws ⑧ from the cabinet.

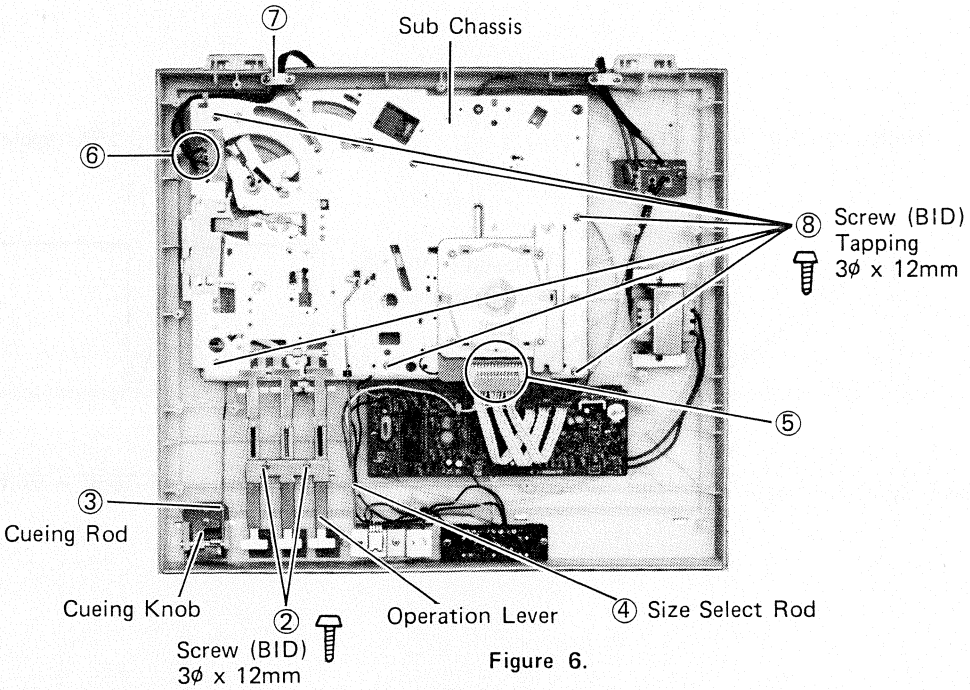


Figure 6.

5. ADJUSTMENTS

ADJUSTMENT OF SEMI-FIXED RESISTORS (VR1, VR2)

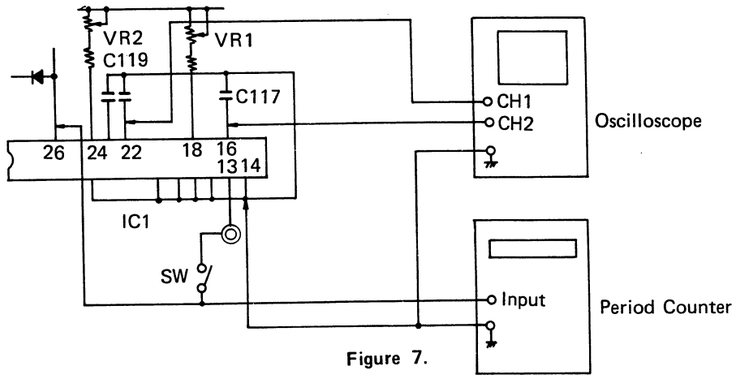


Figure 7.

1. Connect Oscilloscope and Period Counter to IC pins (13, 14, 16, 22, 26 pins)
2. Detach the motor socket
3. Turn the power on and set the speed select switch to 33 rpm.
4. Adjust trigger level (TRG LEV) of period counter (Auto if equipped) and make certain the period is 20.00 ± 0.01 [msec] (19.99 ~ 20.01). (14.545 [msec] in case of 45 rpm). Other than above is failure of X-TAL and IC1.
5. Turn switch ON, adjust trigger level so the trigger input of oscilloscope is CH1 with the revolution setting to 33 rpm and so the waveform stands still.

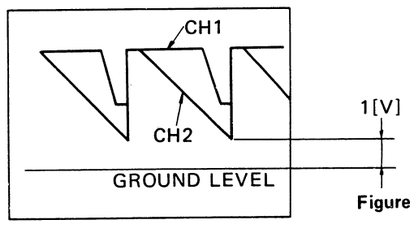


Figure 8.

6. Adjust VR1 so the above waveform of CH2 is 1V.
7. Turn to switch OFF, and drive the motor connecting it to Motor Socket. (Be sure to attach the turntable).
8. Set the revolution to 45 rpm.

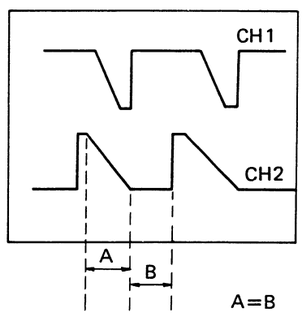


Figure 9.

9. Adjust VR2 so A = B in waveform of CH2 as illustrated in figure above.
10. Set the revolution speed to 33 rpm and make certain the above waveform stabilizes. In this case complete A = B is unnecessary, but extreme A ≪ B is defective.

■ Overhang Adjustment

When replacing a cartridge, it will be necessary to adjust for overhang. As has been indicated in Fig. 10, the distance from the stylus tip to the point of connection to the tonearm is exactly 50mm. When mounting the new cartridge, this distance is adjusted by means of the fixing screws and nuts which hold the cartridge in place in the head shell. (The head shell can be removed by turning the lock nut in the direction of arrow.)

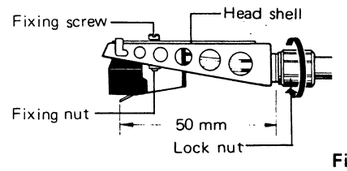


Figure 10.

■ Tracking Force Adjustment

(Note: This adjustment is important)

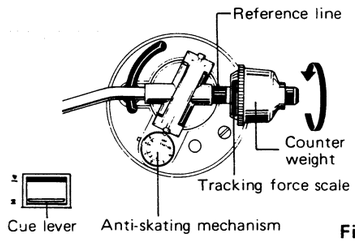


Figure 11.

If the turntable has already been connected to an amplifier, be sure to switch the amplifier's power supply off before commencing this adjustment.

(1) First remove the stylus cover.
(2) Check that the cue lever is in the "▼" position, and that the tonearm itself is free to move from the arm rest.
(3) Set the anti-skating mechanism to read "0".
(4) Now carefully screw the counter weight out backwards until the tonearm is perfectly balanced in a horizontal plane. Then keeping the counter weight still, turn the tracking force scale only to align the "0" with the reference line.
(5) Next turn the counterweight together with the tracking force scale so that the scale reading corresponds to the tracking force rating specified for your cartridge (must be 1.5 ~ 2.0gf). [Stylus force is expressed in grammes force. (gf; 1gf = 10mN)]
(6) Return the tonearm to the arm rest.
(7) Also adjust the anti-skating mechanism to the same value as the tracking force.
Set the round stylus to the position marked "●" and the oval stylus to "⬮"

■ Stylus Height Adjustment

The distance between stylus tip and record surface when the cue lever is in the "▼" position, is adjusted by means of the height adjustment screw on the tonearm pivot (this task will require a small screwdriver)

- Turning in the clockwise direction will lower the stylus.
- Turning in the counterclockwise direction will raise the stylus.

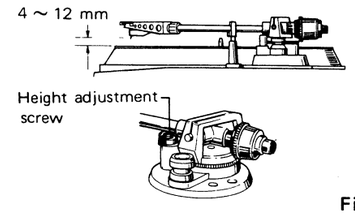


Figure 12.

■ Auto-Start/Auto-Return Adjustment

- When stylus lands too close to the outer edge of the record, turn the auto-start/auto-return adjustment screw in the counterclockwise direction.
- When the stylus lands inside the first track, turn the auto-start/auto-return adjustment screw in the clockwise direction.
- Adjusting the auto-start position will also adjust the auto-return position automatically.

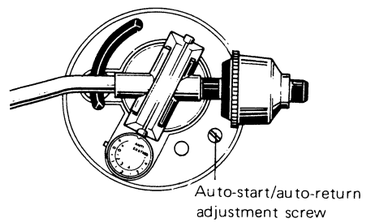


Figure 13.

6. WIRING

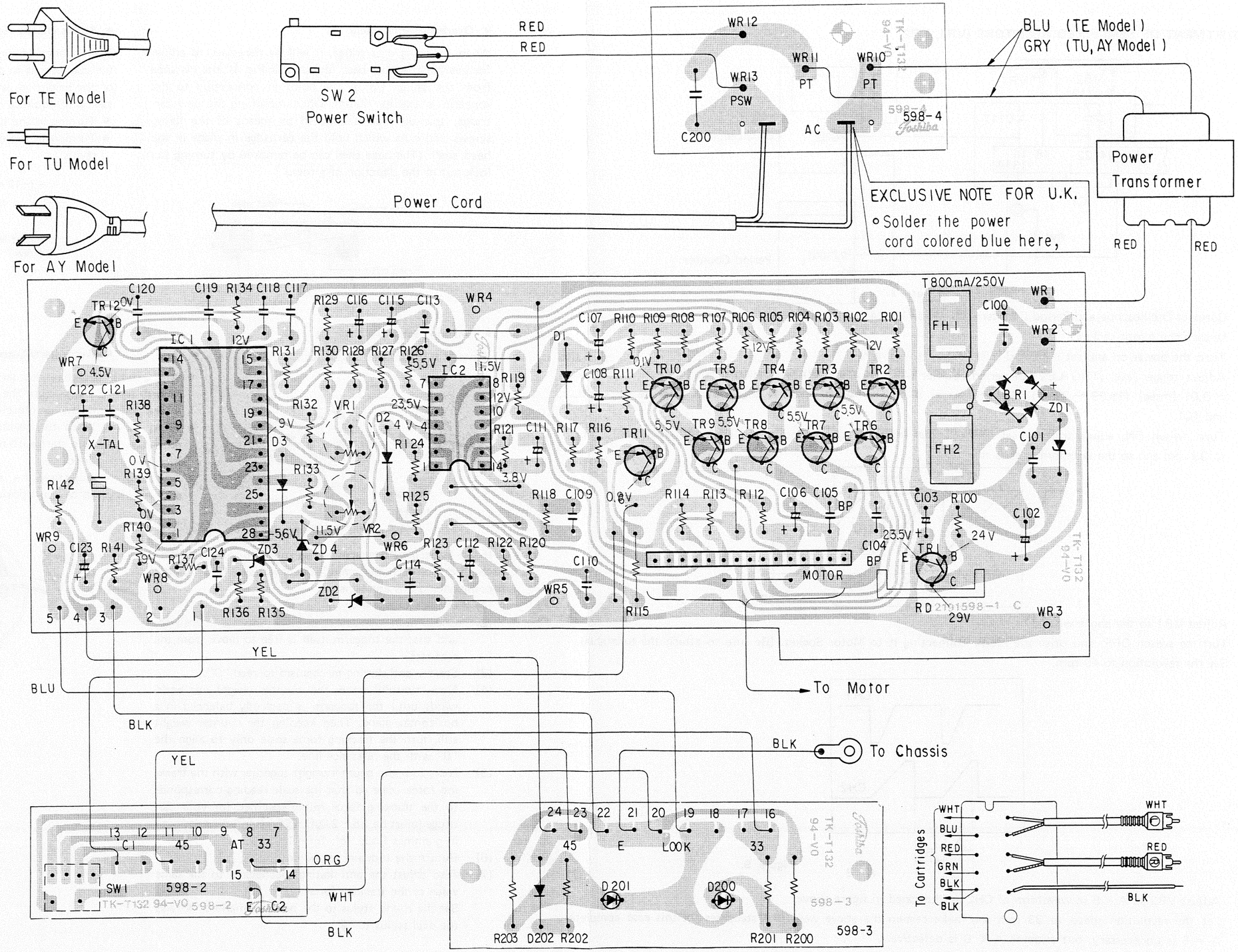
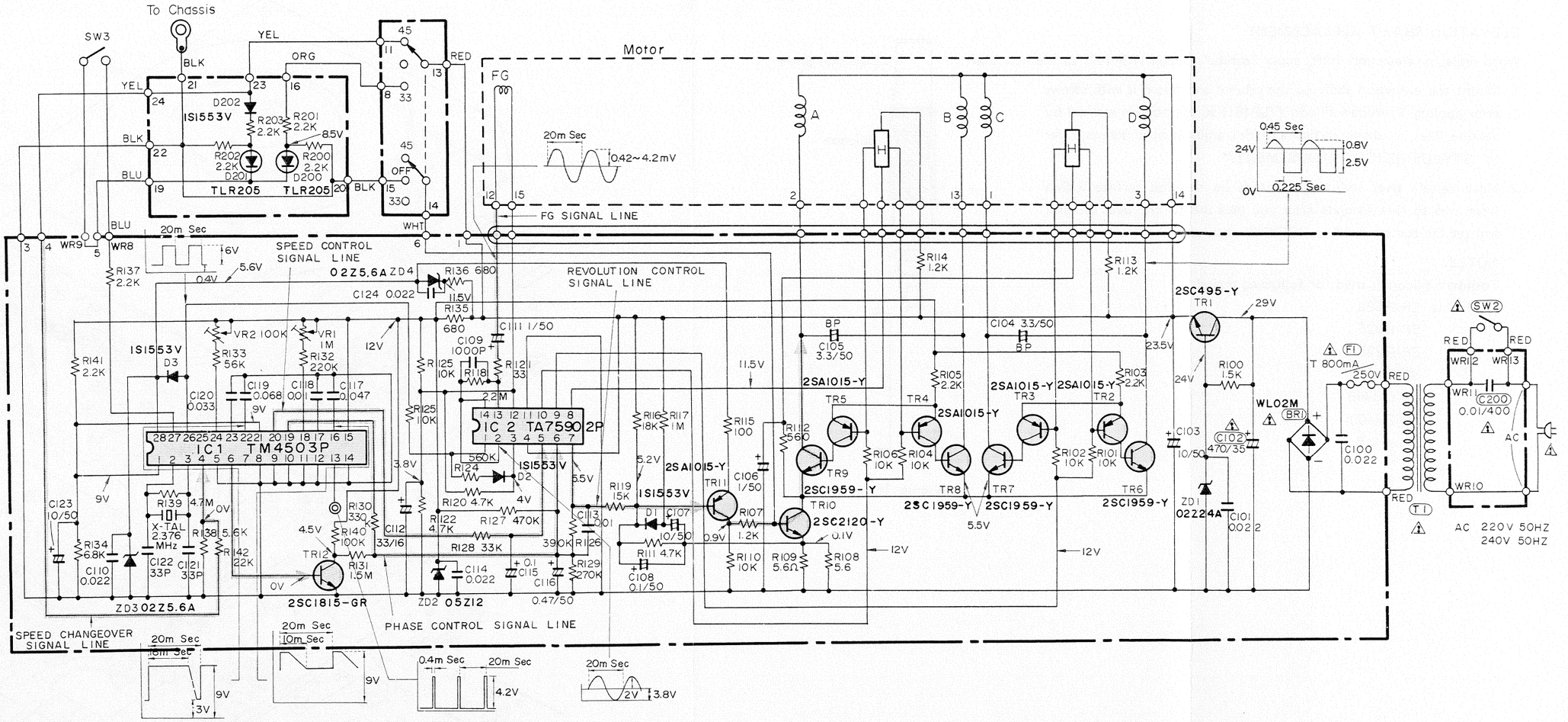


Figure 14.

7. SCHEMATIC DIAGRAM



NOTES

1. Sw1 Speed Select (45rpm Position)
2. Sw2 Power Switch (OFF Position)
3. Sw3 LED ON/OFF Switch (OFF Position)

CAUTION: The ⚠ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Figure 15.

8. ELEVATION SHAFT REPLACEMENT

ELEVATION SHAFT REPLACEMENT

When replacing elevation shaft, apply Toshiba's silicon (TSP451) to the new shaft.

1. Mount the elevation shaft to the cabinet and fasten it with screws after appling Toshiba's silicon (TSP451) to the portion marked by oblique lines as shown in figure 16. For adjustment of screws, refer to "STYLUS HEIGHT ADJUSTMENT."
2. Make certain that stylus tip decends on the disk surface within from two to five seconds after you take the PU arm over the disk and set the cueing knob to "DOWN" position.

NOTES:

Toshiba's silicon is used for following models.

Models SR-F530
SR-F325
SR-F225
SR-Q630
SR-Q630B
SR-F440
SR-A110

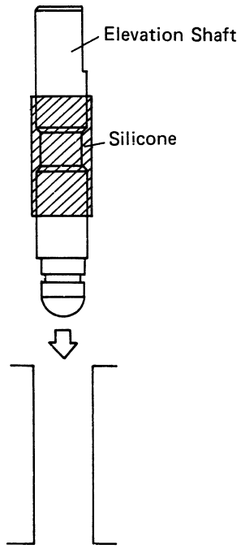
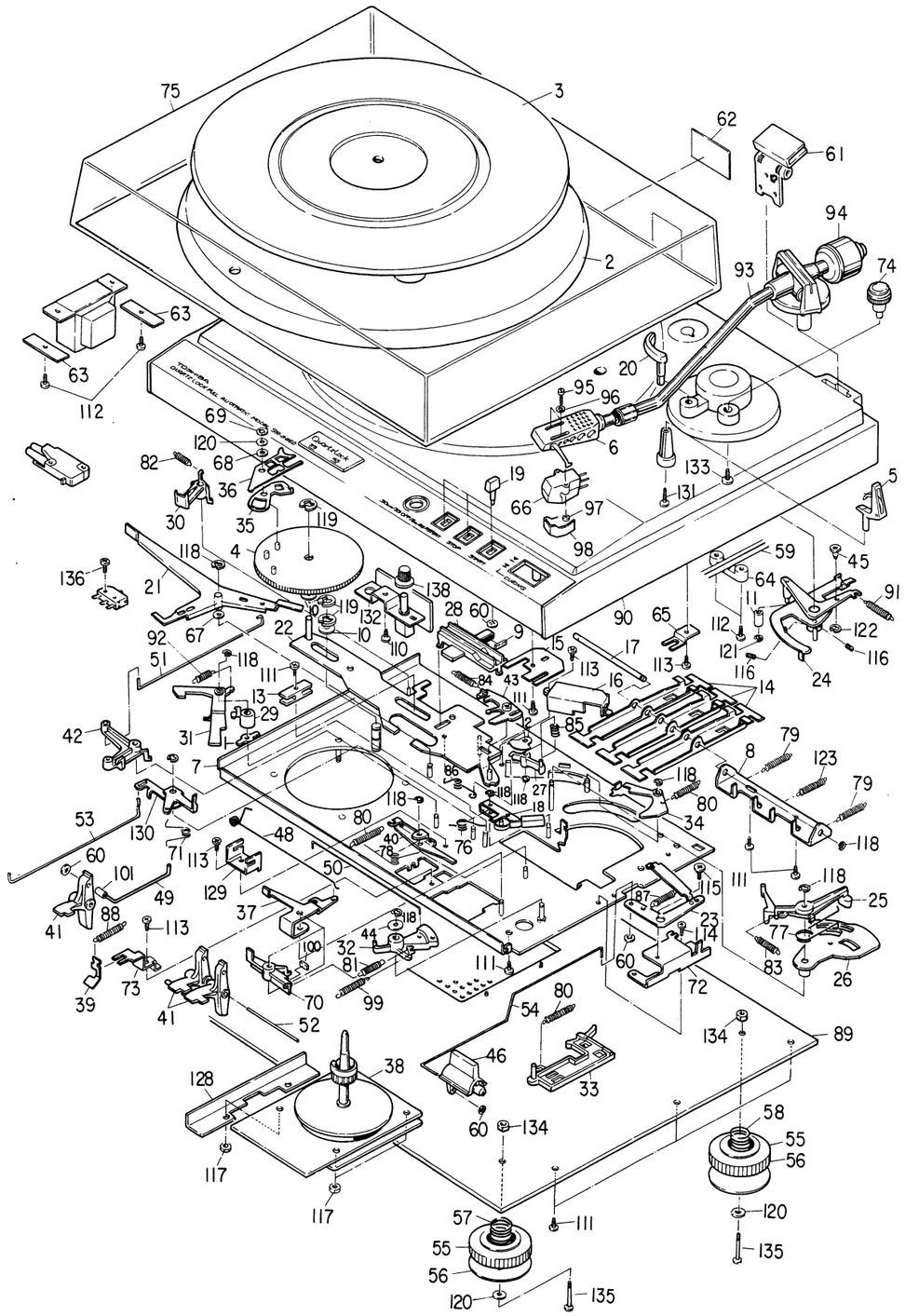


Figure 16.

9. MECHANICAL AND CABINET PARTS LOCATIONS



NOTE: Excluded parts in the Parts List are not available as replacement parts.

Figure 17.

10. PARTS LIST

CAUTION: The ⚠ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
TRANSISTORS, ICS AND DIODES		
TR1		Transistor, 2SC495-Y.X
TR2, 3, 4, 5		Transistor, 2SA1015-Y
TR6, 7, 8, 9		Transistor, 2SC1959-Y
TR10		Tran sistor, 2SC2120-Y
TR11		Transistor, 2SA1015-Y
TR12		Transistor, 2SC1815-GR
IC1		IC, TM4503P
IC2		IC, TA75902P
D1, 2, 3		Diode, 181553V
D200, 201		Diode, TLR205, Light Emitting
D202		Diode, 1S1553V
ZD1		Diode, 02Z24A
ZD2		Diode, 05Z12
ZD3, 4		Diode, 02Z5.6A
⚠ BR1	22115485	Rectifier, WL02M
ELECTRICAL PARTS		
⚠ T1	22223691	Transformer, Power (TE)
⚠ T1	22223692	Transformer, Power (TU)
⚠ T1	22223693	Transformer, Power (AY)
⚠ F1	22144387	Fuse, T 800mA/250V
X-TAL	22153088	Crystal, 2,376 MHz
SW1	22195434	Switch, Rotary, Speed Select
⚠ SW2	22195428	Switch, Micro, Power
SW3	22195435	Switch, Micro, LED ON/OFF
	22165076	Holder, Fuse (For F1)
⚠	22176286	Cord, Power (TE)
⚠	22176536	Cord, Power (TU)
⚠	22176552	Cord, Power (AY)
CAPACITORS J=±5%, K=±10%, M=±20%, Z=-20+80%, P=0+100%		
C100, 101	22342223	Ceramic, 0.022mfd, 50V, Z
⚠ C102	22440300	Electrolytic, 470mfd, 35V
C103	22488100	Electrolytic, 10mfd, 50V
C104, 105	22440352	Electrolytic (BP), 3.3mfd, 50V
C106	22488109	Electrolytic, 1mfd, 50V
C107	22488100	Electrolytic, 10mfd, 50V
C108	22488108	Electrolytic, 0.1mfd, 50V
C109	22343102	Ceramic, 1000pF, 50V, M
C110	22342223	Ceramic, 0.022mfd, 50V, Z
C111	22488109	Electrolytic, 1mfd, 50V
C112	22485330	Electrolytic, 33mfd, 16V
C113	22373103	Mylar, 0.01mfd, 50 V, M
C114	22342223	Ceramic, 0.022mfd, 50V, Z

Symbol No.	Part No.	Description
C115	22488108	Electrolytic, 0.1mfd, 50V
C116	22488478	Electrolytic, 0.47mfd, 50V
C117	22371473	Mylar, 0.047mfd, 50V, J
C118	22372103	Mylar, 0.01mfd, 50V, K
C119	22371683	Mylar, 0.068mfd, 50V, J
C120	22372333	Mylar, 0.033mfd, 50V, K
C121, 122	22360136	Ceramic, 33pF, 50V, J
C123	22488100	Electrolytic, 10mfd, 50V
C124	22342223	Ceramic, 0.022mfd, 50V, Z
⚠ C200	22340147	Ceramic, 0.01mfd, 400V, P
RESISTORS All resistors are carbon film 1/4W, ±5% unless otherwise noted.		
R100	22555152	1.5K ohm
R101, 102	22555103	10K ohm
R103	22555222	2.2K ohm
R104	22555103	10K ohm
R105	22555222	2.2K ohm
R106	22555103	10K ohm
R107	22555122	1.2K ohm
R108, 109	22555569	5.6 ohm
R110	22555103	10K ohm
R111	22555472	4.7K ohm
R112	22555561	560 ohm
R113, 114	22555122	1.2K ohm
R115	22545101	100 ohm
R116	22555183	18K ohm
R117	22555105	1M ohm
R118	22555225	2.2M ohm
R119	22555153	15K ohm
R120	22555472	4.7K ohm
R121	22555330	33 ohm
R122	22555472	4.7K ohm
R123	22555103	10K ohm
R124	22555564	560K ohm
R125	22555103	10K ohm
R126	22555394	390K ohm
R127	22555474	470K ohm
R128	22555333	33K ohm
R129	22555274	270K ohm
R130	22555334	330K ohm
R131	22555155	1.5M ohm
R132	22555224	220K ohm
R133	22555563	56K ohm
R134	22555682	6.8K ohm
R135, 136	22555681	680 ohm
R137	22555222	2.2K ohm

Symbol No.	Part No.	Description
R138	22555562	5.6K ohm
R139	22555475	4.7M ohm
R140	22545104	100K ohm
R141	22555222	2.2K ohm
R142	22555223	22K ohm
R200, 201	22545222	2.2K ohm
R202, 203	22545222	2.2K ohm
VR1	22658421	1M ohm, Semi-fixed
VR2	22658394	100K ohm, Semi-fixed
MECHANICAL AND CABINET PARTS		
1	20709021	Spring, Flat
2	20723069	Turntable
3	20723076	Sheet, Table
4	20727037	Gear, Main
5	20731208	Rest Ass'y, Arm
6	20736041	Shell, Head
9	20746203	Cushion, Return Lever
10	20746204	Spacer, Return Lever
11	20746212	Spacer
12	20746227	Plate, Friction
13	20746260	Guide, Return Lever
18	20751201	Lever, Ass'y, Brake
19	20753306	Button, Operation
20	20751215	Shaft Ass'y, Elevation
21	20751217	Lever Ass'y, Cut
25	20753204	Arm, Micro Switch
26	20753205	Lever, Micro Switch
27	20753212	Lutch, Lead-in
28	20753214	Lift Block
29	20753216	Lever, Lead-in
30	20753236	Lever, Gear Lock
31	20753242	Cam, Size Select
32	20753244	Cam, Repeat
33	20753245	Slider, Lead-in
34	20753266	Lever, Switch Lock
35	20753279	Lutch
36	20753280	Lutch
38	22125336	DD Motor
39	20753286	Plate, Lock
41	20753289	Lever, Connection
42	20753290	Lever, Switch
43	20753291	Click, Repeat
44	20753323	Spring, Flat
45	20757027	Cam, Adjust
46	20753308	Knob, Cueing
48	20763283	Rod
55	20842143	Insulator
56	20849240	Sheet, Insulator
59	22164803	Cord, US PIN
60	20798037	Ring, CS1.9ϕ
61	20861090	Hinge, Player Cover

Symbol No.	Part No.	Description
62	20877333	Nameplate
63	20881262	Spacer, Transformer
64	22184117	Clamp, Cord
66	22155079	Cartridge (C 290M)
67	25764399	Washer, Teflon
68	25764574	Washer, Teflon
69	20798033	Ring, CS3ϕ
71	25773439	Spring, Selector
73	20746261	Plate, Mount-lock
74	20871328	Knob, Anti Skating
75	20847125	Cover Ass'y, Player
76	25773400	Spring, Brake
77	25773403	Spring
78	25773440	Spring, Repeat Lever
79	25776102	Spring
80	25776104	Spring
81	25776142	Spring
82	25776143	Spring
83	25776155	Spring
84	25771885	Spring
85	25772456	Spring, Lead-in
86	25773325	Spring, Click
87	25776144	Spring
88	25776141	Spring
89	20824062	Plate Ass'y, Bottom
90	20811338	Cabinet Ass'y
91	25776144	Spring
92	25776055	Spring, Cam Lever
93	20788103	PU Arm Ass'y
94	20788104	Weight
95	22707042	Screw, 2.6ϕ x 10.5mm
96	20791077	Washer, 2.7ϕ
97	20796027	Nut, 2.6ϕ
98	20788088	Cover, Stylus
99	25776168	Spring, Repeat Cam
110	22707165	Screw(BID), 3ϕ x 10mm, Tapping
111	22707276	Screw(BID), 3ϕ x 12mm, Tapping
112	22707038	Screw(BID), 3ϕ x 16mm, Tapping
113	22701326	Screw(BID), 3ϕ x 8mm, Tapping
114	22707452	Screw(FTBID), 3ϕ x 5mm
115	22701472	Screw(FLT), 2.6ϕ x 13mm
116	22707498	Screw, 3ϕ x 5mm
117	22702115	Nut, 4ϕ
118	22703118	E Washer, 2ϕ
119	22703280	E Washer, 4ϕ
120	22703269	Washer
121	25735159	E Washer, 1.5ϕ
122	25735222	E Washer, 4ϕ, Special
123	25776103	Spring
138	20871344	Knob, Size Select